

WHAT IS CLAIMED IS:

1. An exposure apparatus, comprising:
 - an exposure apparatus main body that transfers a
 - 5 predetermined pattern onto a substrate;
 - an exposure chamber that houses at least a part of said exposure apparatus main body, and in which environmental conditions are kept substantially constant;
 - an air conditioner that performs air conditioning inside
 - 10 said exposure chamber;
 - a machine chamber that houses at least a part of said air conditioner;
 - a supply path of gas for air conditioning supplied from said machine chamber into said exposure chamber;
 - 15 a first chemical substance removing filter arranged in part of said supply path;
 - an exhaust path that forms a path of said gas for air conditioning that returns to said machine chamber from said exposure chamber; and
 - 20 a second chemical substance removing filter arranged in part of said exhaust path to remove chemical impurities in said gas for air conditioning.
2. The exposure apparatus according to claim 1, wherein
- 25 said exposure chamber and said machine chamber are severally formed inside different chambers.
3. The exposure apparatus according to claim 2, wherein

said exposure chamber and said machine chamber are arranged close to each other on a floor, and

said exposure chamber and said machine chamber are connected with each other via a freely detachable connection
5 unit.

4. The exposure apparatus according to claim 3, wherein said connection unit is constituted by an expandable and contractable bellows-like member.

10

5. The exposure apparatus according to claim 3, wherein said first chemical substance removing filter is arranged in the vicinity of said connection unit.

15

6. The exposure apparatus according to claim 1, wherein said exposure chamber and said machine chamber are formed in a same chamber.

20

7. The exposure apparatus according to claim 1, wherein said machine chamber is provided with an outside air inlet, and

said exposure apparatus further comprising: a third chemical substance removing filter arranged in a path of air that is taken in through said outside air inlet.

25

8. The exposure apparatus according to claim 1, wherein part of said supply path that is downstream of said first chemical substance removing filter is made of a material

outgassing less.

9. The exposure apparatus according to claim 1, wherein
said supply path is divided into a plurality of paths
5 in the downstream of said first chemical substance removing
filter arranged in part of the supply path, and

wherein each of said plurality of paths is connected to
a respective chamber of a plurality of different chambers
including said exposure chamber.

10

10. The exposure apparatus according to claim 9, wherein
each of said plurality of paths is provided with an air
filter to remove particles in the vicinity of a blow port of
said gas for air conditioning to each of said plurality of
15 different chambers.

11. The exposure apparatus according to claim 1, wherein
said air conditioner includes a cooler that cools the
gas for air conditioning, which circulates within said machine
20 chamber, and a heater that heats the cooled gas, and

said exposure apparatus further comprising: a
controller that controls the surface temperature of said
cooler so that condensation does not occur.

25

12. The exposure apparatus according to claim 1, wherein
said exposure apparatus main body includes a substrate
stage that holds said substrate and an interferometer that
measures a position of said substrate stage, and

said exposure apparatus further comprising: another air conditioner that performs air conditioning of a part of the space inside said exposure chamber, where said substrate stage and said interferometer are arranged, independently of said
5 air conditioner.

13. The exposure apparatus according to claim 12, wherein

said another air conditioner shares a part of said air
10 conditioner.

14. The exposure apparatus according to claim 1, wherein a surface of said substrate is coated with a chemically amplified resist as a photosensitive agent.
15

15. A device manufacturing method including a lithography process, wherein

exposure is performed in said lithography process by using the exposure apparatus according to claim 1.
20

16. An exposure apparatus, comprising:

an exposure apparatus main body that transfers a predetermined pattern onto a substrate;

an exposure chamber that houses at least a part of said
25 exposure apparatus main body, and in which environmental conditions are kept substantially constant;

a machine chamber connected to said exposure chamber via a supply path and via an exhaust path;

an air conditioner arranged in said machine chamber that includes a cooler to cool gas for air conditioning circulating within the machine chamber and that performs air conditioning inside said exposure chamber; and

5 a controller that controls the surface temperature of said cooler so that condensation does not occur.

17. The exposure apparatus according to claim 16, wherein

10 said air conditioner further includes a heater that is arranged in said machine chamber and that heats said cooled gas.

18. The exposure apparatus according to claim 16, further comprising:

15 a drain pan arranged below said cooler in a direction of gravity.

19. The exposure apparatus according to claim 18, wherein

said drain pan is a drain pan that is not connected to a pipe system.

20. The exposure apparatus according to claim 16, wherein

25 said exposure apparatus main body includes a substrate stage that holds said substrate and an interferometer that measures a position of said substrate stage, and

said exposure apparatus further comprising: another air conditioner that performs air conditioning of a part of the space inside said exposure chamber, where said substrate stage and said interferometer are arranged, independently of said
5 air conditioner.

21. The exposure apparatus according to claim 20, wherein

said another air conditioner shares a part of said air
10 conditioner.

22. The exposure apparatus according to claim 16, wherein

a surface of said substrate is coated with a chemically
15 amplified resist as a photosensitive agent.

23. A device manufacturing method including a lithography process, wherein

exposure is performed in said lithography process by
20 using the exposure apparatus according to claim 16.

24. An exposure apparatus, comprising:

an exposure apparatus main body that transfers a pattern formed on a mask onto a substrate;

25 an exposure chamber that houses said exposure apparatus main body; and

another chamber constituting an environmental control chamber separate from said exposure chamber and arranged on

a side of said exposure chamber, wherein

a blow port of gas for air conditioning supplied into said exposure chamber is provided in a boundary area between said exposure chamber and said another chamber.

5

25. The exposure apparatus according to claim 24, further comprising:

a mask transportation system housed in said another chamber, which transports a mask into said exposure apparatus main body and transports said mask from said exposure apparatus main body.

10

26. The exposure apparatus according to claim 25, further comprising:

an air filter to remove particles, which is arranged on the side of said blow port opposite said another chamber.

15

27. The exposure apparatus according to claim 24, further comprising:

a chemical substance removing filter arranged in the exhaust path of said gas for air conditioning that returns from said exposure chamber to an air conditioner for said exposure chamber.

20

28. The exposure apparatus according to claim 27, wherein

25

said air conditioner includes a cooler that cools said gas for air conditioning, and

said exposure apparatus further comprising: a controller that controls the surface temperature of said cooler so that condensation does not occur.

5 29. The exposure apparatus according to claim 24, wherein

supply paths and an exhaust paths are constructed and arranged for said exposure chamber and said another chamber such that air conditioning thereof is performed by a same air
10 conditioner.

30. The exposure apparatus according to claim 24, wherein

said exposure apparatus main body includes a substrate stage that holds said substrate and an interferometer that measures a position of said substrate stage, and
15

said exposure apparatus further comprising: another air conditioner that performs air conditioning of a part of the space inside said exposure chamber, where said substrate stage and said interferometer are arranged, independently of said
20 air conditioner.

31. The exposure apparatus according to claim 30, wherein

25 said another air conditioner shares a part of said air conditioner.

32. The exposure apparatus according to claim 24,

wherein

a surface of said substrate is coated with a chemically amplified resist as a photosensitive agent.

5 33. A device manufacturing method including a lithography process, wherein

exposure is performed in said lithography process by using the exposure apparatus according to claim 24.

10 34. An environmental control method of an exposure apparatus that supplies gas at least the temperature of which is controlled into an exposure chamber that houses at least a part of an exposure apparatus main body such that environmental conditions are kept substantially constant
15 inside said exposure chamber, said exposure apparatus main body transferring a predetermined pattern onto a substrate, wherein

chemical impurities in said gas are removed in an exhaust path from said exposure chamber, and at least part of said
20 gas from which said chemical impurities have been removed is supplied into said exposure chamber via a chemical substance removing filter.

25 35. The environmental control method of the exposure apparatus according to claim 34, wherein

the surface temperature of a cooler for said gas is set at such a temperature that condensation does not occur.

36. An environmental control method of an exposure apparatus that supplies gas at least the temperature of which is controlled into an exposure chamber that houses at least a part of an exposure apparatus main body such that
5 environmental conditions are kept substantially constant inside said exposure chamber, said exposure apparatus main body transferring a predetermined pattern onto a substrate, wherein

10 said gas is made to pass through a cooler before supplying said gas into said exposure chamber and the surface temperature of said cooler is set at such a temperature that condensation does not occur.

37. An exposure apparatus, comprising:

15 an exposure apparatus main body that transfers a predetermined pattern onto a substrate;

a substrate transportation system that transports said substrate to said exposure apparatus main body;

20 a first chamber that houses at least a part of said exposure apparatus main body and in which environmental conditions are kept substantially constant;

a first return duct an end of which is connected to said first chamber and through which gas exhausted from said first chamber passes;

25 a second chamber that houses at least a part of said substrate transportation system and in which environmental conditions are kept substantially constant;

a second return duct an end of which is connected to said

second chamber and through which gas exhausted from said second chamber passes; and

5 a first chemical substance removing filter that is connected to another end than said end of said first return duct and to another end than said end of said second return duct and that removes chemical impurities in both of gas exhausted from said first chamber and gas exhausted from said second chamber.

10 38. The exposure apparatus according to claim 37, further comprising:

a mask transportation system that transports a mask on which said predetermined pattern is formed.

15 39. The exposure apparatus according to claim 38, wherein

said mask transportation system includes a storing section that stores a plurality of masks.

20 40. The exposure apparatus according to claim 38, further comprising:

a third chamber that houses at least a part of said mask transportation system and in which environmental conditions are kept substantially constant; and

25 a third return duct an end of which is connected to said third chamber and through which gas exhausted from said third chamber passes, and wherein

another end than said end of said third return duct is

connected to said chemical substance removing filter together with said another end of said first return duct and said another end of said second return duct.

5 41. The exposure apparatus according to claim 37, further comprising:

a machine chamber in which a cooler, a heater and a blower that blows temperature-adjusted gas to said first chamber are arranged, and wherein

10 said first chemical substance removing filter is arranged inside said machine chamber and is connected to both of said another end of said first return duct and said another end of said second return duct via an opening made in part of said machine chamber.

15

42. The exposure apparatus according to claim 41, further comprising:

a second chemical substance removing filter that is arranged in part of a supply path for supplying
20 temperature-adjusted gas from said machine chamber at least to said first chamber and removes chemical impurities in said temperature-adjusted gas.

43. The exposure apparatus according to claim 42,
25 wherein

said machine chamber and said first chamber are connected to each other to be separable, and

wherein said second chemical substance removing filter

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2
--	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	---